Oct. 14, 1952 W. E. RICHARD 2,613,818

REFRIGERATOR SHELF

Filed Oct. 2, 1947 2 SHEETS—SHEET 1

Fig. 2

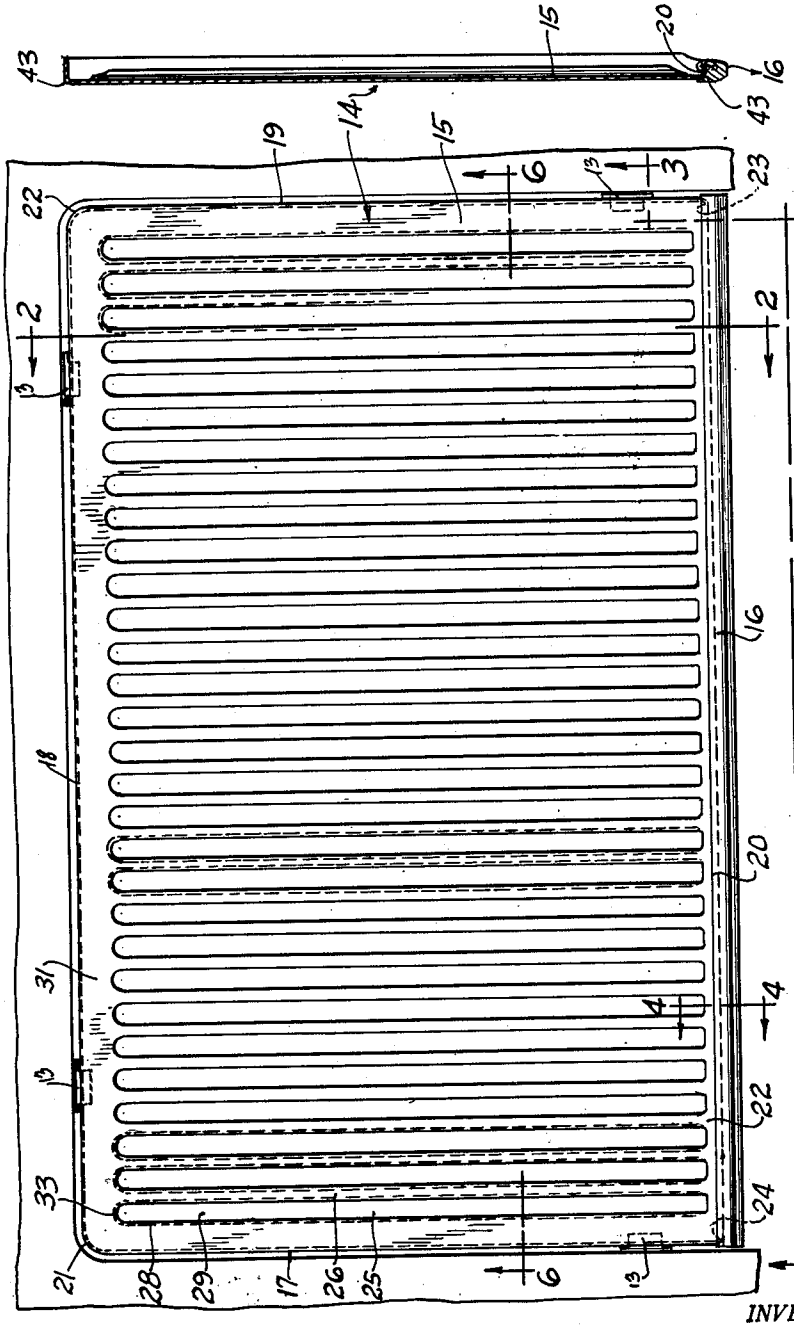


Fig. 1

INVENTOR.
W. E. Richard
BY
his Atty

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Fig. 3

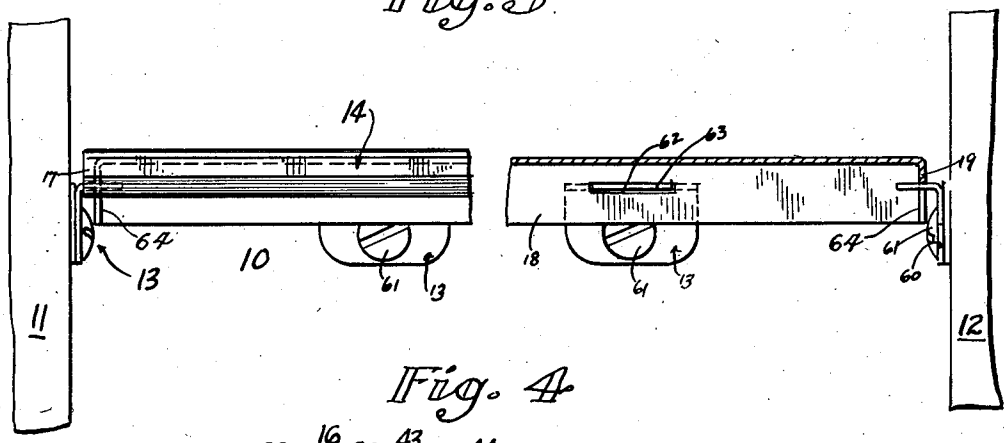


Fig. 4

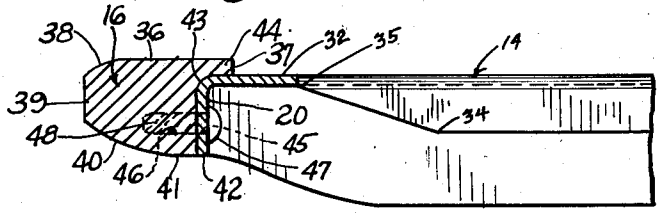


Fig. 5

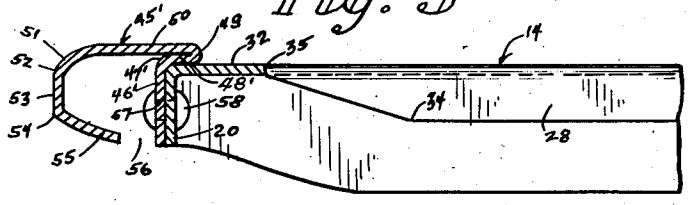
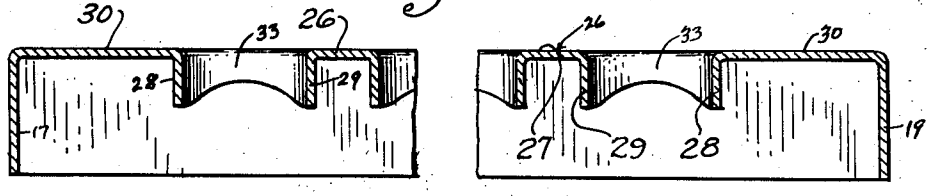


Fig. 6



INVENTOR.
W. E. Richard
BY
R. H. Arndt
his Atty

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REFRIGERATOR SHELF

William E. Richard, Evansville, Ind., assignor to Seeger Refrigerator Company, St. Paul, Minn., a corporation of Minnesota

Application October 2, 1947, Serial No. 777,417

1 Claim. (Cl. 211—153)

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The present invention relates to refrigerator shelves, and is particularly concerned with refrigerator shelves of the type that are apertured to provide for the free circulation of the air within the compartment in which they are located.

One of the objects of the invention is the provision of an improved refrigerator shelf which is strong, light in weight, which provides a smooth support for receptacles and articles of all kinds, yet which permits a maximum amount of air circulation through its apertures and around the food supported upon the shelf. Another object of the invention is the provision of an improved shelf which may be manufactured at a very low cost, and with a minimum number of machine operations, and which is adapted to provide a finished appearance, particularly from its front and top, and which also is provided with a hand grip portion at its forward edge, by means of which the shelf may be slid out of its place and adjusted upon other supporting brackets, if desired.

Another object of the invention is the provision of an improved shelf for refrigerators adapted to be constructed entirely of sheet metal or of sheet metal and an extruded, cast, or rolled bar so that a minimum number of different kinds of material are employed, these parts being so assembled that there is a ledge at the forward edge of the shelf for preventing articles from sliding off the shelf. The point of juncture between the forward bar or trim and the body of the shelf is concealed and covered so that dirt cannot penetrate at this point; and the means of securing these parts together is concealed.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the two sheets of drawings,

Fig. 1 is a fragmentary horizontal sectional view through a refrigerator cabinet provided with a shelf embodying the invention, showing a top plan view of the shelf;

Fig. 2 is a sectional view of the shelf alone, taken on the plane of the line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a front elevational view of the shelf showing fragments of the cabinet and a section on the plane 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a fragmentary sectional view, showing the mode of securing the shelf and front trim bar together in such manner as to conceal the

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fastening means and protect the joint from the entrance of dirt and to provide an upwardly projecting ledge;

Fig. 5 is a view similar to Fig. 4 of a modification utilizing a rolled metal section of sheet metal for forming the front trim bar;

Fig. 6 is a fragmentary sectional view through the shelf, taken on the plane of the line 6—6 of Fig. 1.

Referring to Fig. 3, 10 indicates the compartment of a refrigerator, the side walls 11 and 12 of which are provided with inwardly extending metallic brackets 13 at the front and the back of the compartment 10 on each wall for supporting a shelf 14.

The shelf 14 is shown in plan in Fig. 1, and it consists of a body portion 15 and a front trim bar 16. The body portion 15 preferably consists of a substantially rectangular sheet of metal, such as aluminum or magnesium, which may be provided with an anodized mat finish.

In other embodiments of the invention the body 15 may consist of sheet steel which is plated with some suitable material, such as zinc.

The body 15 is provided about its border with the depending border flanges 17, 18, 19, and 20 and the border flanges 17—19 may be relatively wide, while the front border flange 20 is preferably made narrower. These border flanges are joined at the corners by partially cylindrical flange formations 21, 22, 23, 24, thus providing the body 15 with a continuous depending border flange adapted to rest upon the brackets 13 on each side, and adapted to reinforce and stiffen the entire assembly.

The rear body flange 18 may also rest upon two or more similar brackets 13, thus eliminating the necessity for further transversely extending reinforcement other than the border flange 18 at this point.

The front border flange 20, while being narrower, is reinforced and strengthened by being secured at regularly spaced points to the front trim bar 16, so that, although there are no brackets 13 for supporting the shelf at its front edge, adequate strength is provided by means of the front bar 16.

The body 15 of the shelf is provided with a multiplicity of elongated slots or apertures 25 separated by the remaining narrow body portions 26, each of which has a plane upper portion 27 and a pair of depending reinforcing flanges 28, 29, as shown in Fig. 5.

The first slot 25 is spaced from the border 17 or 19 by a relatively wide plane portion 30 of the body 15; and the ends of the slots at the

back of the shelf are spaced from the rear border 18 by a relatively wide plane portion 31 of the body 15. There may be a narrower flange 32 at the front end of the slots 25, since at this end the shelf is reinforced by the front bar 16.

The width of each of the flanges 28 and 29, which depend from the rib formations 26, is equal to one-half the width of each slot 25, as these flanges are formed by slitting the body 15 and bending the portions 28 and 29 downwardly out of the body 15. At the rear end of each slot 25 the depending flanges 28 and 29 are preferably joined by a partially cylindrical flange 33, which also serves to reinforce and strengthen this end of the shelf.

At the front end of each slot 25 the depending flanges 28, 29 may be cut away at the point 34 and beveled upwardly toward that point from 35 to 34 (see Fig. 5).

The front edge of the shelf is reinforced by means of the front bar 16, which may take any one of several forms. In the form illustrated in Fig. 4 the bar 16 may be an extruded and polished aluminum bar of the section shown. For example, the upper side 36 of this bar may have a plane surface, and at its rear corner there is a vertical plane surface 37 forming a shoulder for preventing articles from sliding off the shelf.

At the forward and upper corner the bar 16 may be curved downwardly at 38; and its extreme front edge 39 may be plane and may extend forwardly. The lower front edge is beveled off at 40, and the vertical depth of the assembly is preferably such that the bottom 41 is flush with the lower edge 42 of the front border flange 20.

In order to provide a maximum amount of strength the border flanges 17 to 20 are joined to the body 15 with a gradually rounded corner 43; and the front bar 16 is preferably recessed to have a substantial fit against the front surface of the front border flange 20 and the rounded corner 43 also extending rearwardly of the corner 43 to the abrupt shoulder 37.

Thus the joint between the bar 16 and the body of the shelf is overlapped and concealed by the rearwardly extending portion 44 of the bar 16; and the curved surface at the rear of the bar 16 fits the curved flanges 20 and 43 in such manner as to provide a very snug engagement between the bar 16 and the shelf 14.

Various modes of securing these two members 14 and 16 may be employed, such as riveting, welding, soldering, etc. I prefer, in the case of an extruded bar, to provide the depending flange 20 with a plurality of apertures 45 which register with bores 46 in the bar 16. Headed pins or fasteners 47 of the type having a self-cutting helical screw thread 48 may be employed.

These headed fasteners may be driven into the bores 46 through the apertures 45 by means of a hammer or other suitable tool, and they cut their own threads due to the long pitch of the threads 48, turning as they go in and securely fastening the bar 16 to the shelf 14.

In other embodiments of the invention the bar 16 may be welded at its rear side to the flange 20.

Referring now to Fig. 5, this is a modification in which the body 14 of the shelf may again consist of a light metal stamping, such as aluminum; or it may consist of a sheet steel stamping plated with zinc. In this case the front reinforcing bar may consist of a rolled section of stainless steel, indicated in its entirety by the numeral 45'.

The front reinforcing bar preferably includes a vertical attaching flange 46' which extends up to a point above the body flange 32, where it is bent toward the right at 47' at a right angle.

The channeled bar 45' again reinforces the front edge of the shelf so that the border flange 20 at the lower end of the shelf in Fig. 2 may be made relatively narrow and so that there may be a maximum length of the apertures 25 and a maximum air circulation permitted.

It then has a lower horizontal portion 48' and is bent backwardly at a sharp angle 49 upon itself and provided with a horizontal plane portion 50 corresponding to the plane surface 36 on the bar 16.

It is then provided with a downwardly curved upper front portion 51 and with a downward bend at 52.

The face of the channeled bar 45' is indicated at 53, and corresponds to the edge surface 39 of bar 16. At 54 the channeled member 45' is bent backwardly at an obtuse angle and provided with the diagonally extending portion 55. This leaves an opening 56 along the bottom which may be used for receiving the fingers, or the fingers may be placed behind the flange 20 in drawing the shelf in or out, when the shelf is to be adjusted or placed upon other supporting studs 13.

In this case the angle at 49 and shoulder provided thereby again prevents materials on the shelf from sliding off the front edge; and the horizontal portions 48' and 50 of the channeled member 45' overlie the groove between the shelf and the front bar, and prevent dirt or other material from getting into the crack.

These two members have their flanges 46' and 20 provided with registering bores 57, which receive rivets 58, by means of which they are secured together.

In other embodiments of the invention they may be spot welded instead of being riveted; but in any event, the fastening means is wholly concealed beneath the rearwardly extending portion 48' and the forwardly extending portion 50. While it is accessible by turning the shelf upside down, the shelf presents a finished appearance from the front and top, where no fastening means are visible.

The brackets 13 preferably comprise simple angle brackets having an apertured body flange 60, which may be secured to the side wall of the inner liner by means of screw bolts 61 threaded into apertures in the liner and into threaded members which may be secured behind said apertures outside of the liner.

The horizontally extending flange 62 of each bracket 13 may be slightly narrower, as will be seen in Fig. 1, and each such flange is long enough to extend under the border flanges 17—19 of the shelf.

The rear border flange 18 may have slots 63 into which the horizontal flange 62 of those brackets 13 is inserted when the shelf is shoved into place.

The side border flanges 17 and 19 are slotted upwardly from the bottom, as indicated at 64, to the same horizontal plane as the slots 62 so that the shelf 14 may be slid into engagement with the rear brackets and then lowered on the two front brackets 13, one of which is located at each side, near the front of the side walls.

Thus the side brackets 13 prevent the shelf from coming off the rear brackets 13, but the shelf may be removed by lifting the front of the shelf and sliding it off the rear brackets 13. Other types of supporting brackets may also be supplied.

The front and top are easily cleaned because there are no projections or roughness caused by fastening means, and it is very easy to maintain the shelf in a clean and sanitary condition.

While the present shelf structure is very light and may be manufactured very economically, it is also very strong, and is adapted to support the weight of any food or other article to be cooled which may be placed in the cabinet.

It will thus be observed that I have invented an improved shelf structure which includes a minimum number of parts and which may be made out of sheet metal stampings combined with an extruded front bar or a rolled section, or a channeled front bar made out of a rolled section.

The present shelf permits a maximum amount of air circulation through apertures which are formed by pressing out reinforcing flanges in the body of the shelf; and while this removes considerable material from the body of the shelf, the front of the shelf is reinforced and stiffened by the improved mode of attachment and the structure of my front trim bars.

These bars cover and conceal all the fastening means and provide a forward ledge by means of which articles are prevented from sliding off the front of the shelf; and the assembly has a finished and smooth appearance, and can be maintained in a sanitary condition with a minimum amount of effort.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claim.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

In a sanitary refrigerator shelf, an integral substantially rectangular sheet metal member having an upper plane surface bordered on its front, rear and both sides by a depending border flange extending downward at substantially right angles to said upper surface, said member

having its upper surface provided with a multiplicity of slots of uniform width and length extending from a point near the front border flange to a point near the rear border flange, said slots being separated by parallel plane portions of said member of uniform width, and said slots having depending border flanges on each side of said slots, extending substantially the full length of said slots, and a front retaining and finishing bar carried by said front depending border flange and having a plane top surface, a rear plane surface attached to the front border flange and being co-extensive therewith, a rearwardly extending upper rib joining the plane top surface and rear plane surface and overlapping the crack between said bar and said front border flange, said bar being tapered above and below toward a front edge surface, said bar comprising a channeled sheet metal member open at its bottom rear portion thus providing a space between said front edge surface and said rear plane surface and being secured to said front border flange by a plurality of rivets extending longitudinally through said front border flange and said rear plane surface, whereby said bar conceals said rivets from the top and the front of said shelf.

WILLIAM E. RICHARD.

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